REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is filed in response to the Examiner's Answer mailed on April 1, 2010 in connection with the subject application.

Response to Arguments in the Examiner's Answer

1. Rejection Under 35 USC 103(a) over Dang et al. in view of Tam

Claims 5, 6, 10-13, 18-22, 25 and 27-33 were rejected under 35 U.S.C. §103 as being unpatentable over Dang et al. in view of Tam. For at least the reasons set forth below, reversal of this rejection is respectfully requested.

As discussed previously in the Appeal Brief on pages 6-9, Tam is deficient in not describing how to retain the biological activity of the peptides or proteins used to make branched peptides. Rather, Tam describes uses of MAP structures which rely on the antigenicity of the MAP peptides, such as immunoassays, serodiagnosis, epitope mapping and affinity purification. Moreover, Tam teaches that including a peptide in a MAP structure can produce an inhibitor due to branched peptides with clustered positive charges, which is an observation inconsistent with retention of agonist activity of the peptide included in the MAP structure.

Nevertheless, on pages 9-10 of the Examiner's Answer, the Examiner has erroneously asserted that Table VI on page 475 of Tam describes applications of MAPs in areas which do not rely on immunogenicity and antigenicity of the MAPs. However, the uses listed in Table VI such as immunoassays and serodiagnosis, epitope mapping and ligand binding, and biochemical studies which involve affinity purification of antibodies, presentation of T-cell

epitopes and affinity purifications, are all activities which depend on antigenicity of the MAP peptides. Also, the use of MAPs described in Table VI as inhibitors is clearly not an activity which results in preservation of agonist activity of the peptide attached to the MAP.

Thus, the Examiner relies on the vague description in Table VI on the application of MAPs as artificial proteins, such as "minicollagen" and "synthestic enzyme", as somehow validating the use of MAPs in which "biological activity is retained in the branched peptides." Nothing could be further from the truth. As Table VI clearly states, this application involves ***artificial proteins***. One would conclude that a peptide of some sort has been fabricated which is not a naturally occurring peptide but which exhibits some sort of activity described as "minicollagen" (Fields et al., 1993) or "synthetic enzyme" (Hahn et al., 1990). This hardly reflects retention of the biological activity of a protein, such as "cell-binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures" which are recited by independent claim 5. In addition, Table VI indicates that the ability to construct some sort of artificial peptide in a MAP is a rare event, i.e., of the 36 references cited in Table VI, only two pertain to artificial proteins. Success of using MAPs in applications as artificial proteins does not appear to be predictable. More importantly, there is no indication anywhere in Tam that MAPs have been successfully used in which the activities of cell-binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures can be preserved in a MAP.

On page 12 of the Examiner's Answer, the Examiner asserts that it is not necessary for the combination of Dang et al. and Tam to provide a MAP which functions as cell binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures. Rather, the Examiner takes the position that "it is not necessary that the prior art suggest the combination to achieve the same advantage or results discovered by applicant." This position is improper. Here, the property of "cell binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures" is positively recited by independent claim 5, and as discussed at length above and in the Appeal Brief, neither Dang et al. nor Tam would have led one to expect that a MAP with these properties could be obtained.

For at least the above reasons and the reasons set forth in the Appeal Brief, reversal of the rejection based on 35 U.S.C. §103 over Dang et al. in view of Tam is respectfully requested.

2. **Rejection Under 35 USC 103(a) over Bhatnagar in view of Tam**

Claims 5, 10-13, 18-22 and 25 were rejected under 35 U.S.C. §103 as being unpatentable over Bhatnagar in view of Tam. For at least the reasons set forth below, reversal of this rejection is respectfully requested.

As discussed previously in the Appeal Brief on pages 10-13, Tam is deficient in not describing how to retain the biological activity of the peptides or proteins used to make branched peptides. Rather, Tam describes uses of MAP structures which rely on the antigenicity of the MAP peptides, such as immunoassays, serodiagnosis, epitope mapping and affinity purification. Moreover, Tam teaches that including a peptide in a MAP structure can produce an inhibitor due to branched peptides with clustered positive charges, which is an observation inconsistent with retention of agonist activity of the peptide included in the MAP structure.

Nevertheless, on pages 14-15 of the Examiner's Answer, the Examiner has erroneously asserted that Table VI on page 475 of Tam describes applications of MAPs in areas which do not rely on immunogenicity and antigenicity of the MAPs. However, the uses listed in Table VI such as immunoassays and serodiagnosis, epitope mapping and ligand binding, and biochemical studies which involve affinity purification of antibodies, presentation of T-cell epitopes and affinity purifications, are all activities which depend on antigenicity of the MAP peptides. Also, the use of MAPs described in Table VI as inhibitors is clearly not an activity which results in preservation of agonist activity of the peptide attached to the MAP.

Thus, the Examiner relies on the vague description in Table VI on the application of MAPs as artificial proteins, such as "minicollagen" and "synthestic enzyme", as somehow validating the use of MAPs in which "biological activity is retained in the branched peptides." Nothing could be further from the truth. As Table VI clearly states, this application involves ***artificial proteins***. One would conclude that a peptide of some sort has been fabricated which is not a naturally occurring peptide but which exhibits some sort of activity described as "minicollagen" (Fields et al., 1993) or "synthetic enzyme" (Hahn et al., 1990). This hardly reflects retention of the biological activity of a protein, such as "cell-binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures" which are recited by independent claim 5. In addition, Table VI indicates that the ability to construct some sort of artificial peptide in a MAP is a rare event, i.e., of the 36 references cited in Table VI, only two pertain to artificial

proteins. Success of using MAPs in applications as artificial proteins does not appear to be predictable. More importantly, there is no indication anywhere in Tam that MAPs have been successfully used in which the activities of cell-binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures can be preserved in a MAP.

On page 17 of the Examiner's Answer, the Examiner asserts that it is not necessary for the combination of Dang et al. and Tam to provide a MAP which functions as cell binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures. Rather, the Examiner takes the position that "it is not necessary that the prior art suggest the combination to achieve the same advantage or results discovered by applicant." This position is improper. Here, the property of "cell binding ligands, anti-inflammatory structures, anti-thrombogenic structures, growth factor structures, or adhesive or adhesion barrier structures" is positively recited by independent claim 5, and as discussed at length above and in the Appeal Brief, neither Dang et al. nor Tam would have led one to expect that a MAP with these properties could be obtained.

For at least the above reasons and the reasons set forth in the Appeal Brief, reversal of the rejection based on 35 U.S.C. §103 over Bhatnagar in view of Tam is respectfully requested.

CONCLUSION:

From the foregoing, reversal of all the rejections based on 35 U.S.C. §103 is believed to be in order.

Respectfully submitted,

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